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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

ZHU, JOHN X

ART UNIT PAPER NUMBER

2858

DATE MAILED: 11/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/563,407

Applicant(s)

HEIN, DIERK

Examiner

John Zhu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-32 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 20-31 is/are rejected.
- 7) ☒ Claim(s) 32 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 January 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1/4/06.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Drawings

1. The drawings are objected to because blocks 106 and 114 in Fig. 1 and block 406 in Fig. 4 lack a descriptive label. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: On page 8, applicant discloses that the absolute magnitude is not important and that only whether the detected current is rising or falling is necessary (lines 1-4). However, applicant further discloses that the program 420 checks whether the current has risen in comparison with the preceding current (lines 30-32). If the detected current is known only as rising or falling, then the program 420 cannot compare whether the current has risen from previous measurements. Please be consistent.

Appropriate correction is required.

Claim Objections

3. Claims 20 and 30 are objected to because of the limitation of *peak current*. It is noted that the peak current could be a maximum current applied to the solenoid and not necessarily the point at which movement occurs, in which case would inconsistent with the specification.

Appropriate correction is required.

4. Claims 26 and 27 are objected to because of the following informalities: please provide consistent language in the dependency preamble. "*The method as claimed in one of the preceding...*" is not consistent with the other dependent claims.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 20-29 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The claims are directed to a judicial exception; as such, pursuant to the Interim Guidelines on Patent Eligible Subject Matter (MPEP 2106), the claims must have either physical transformation and/or a useful, concrete and tangible result. The claims fail to include a transformation from one physical state to another. Although, the claims appear useful and concrete, there does not appear to be a tangible result claimed. Merely *determining the pressure* would not appear to be sufficient to constitute a tangible result, since the outcome of *determining the pressure* step has not been used in a disclosed practical application nor made available in such a manner that its usefulness in a disclosed practical application can be realized. As such, the subject matter of the claims is not patent eligible.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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7. Claims 30 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Broome (5,277,485).

With respect to claims 30 and 31, Broome discloses all aspects of the claim including a device for determining a pressure in a region which is closed off by a solenoid valve (Fig. 2, element A), having a control unit (Fig. 1, element 20) for applying a voltage to the valve, wherein the control unit is *capable* of determining a peak point and value of the current (Fig. 4) and determining the pressure (Fig. 3) on the basis of the peak point and value.

It is noted that the limitation includes the term capable. Applicant is reminded that although features of an apparatus claim may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function alone. See *In re Swinehart*, 169 USPQ 226 (CCPA 1971); *In re Schreiber*, 44 USPQ2d 1429 (Fed. Cir. 1997).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 20, 21, 23 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Broome in view of Kurokawa et al. (5,496,101) and Archer et al. (5,825,216).

With respect to claims 20 and 21, Broome discloses measuring pressure in a region which is closed off by a solenoid valve (Fig. 2, element A) by applying a voltage and measuring the peak value of the current (Fig. 4, first local peak).

Broome does not explicitly disclose determining the pressure on the basis of the peak current value.

Kurokawa discloses the pressure of a chamber being proportional to the current of the solenoid (Fig. 2). However, this is a simplified model that does not take into account the effect of mutual inductance. Archer discloses that the spool value actually moves after a peak current value is reached in the solenoid (Column 1, lines 49-51). Hence, the proportional relationship approximately holds *after* a local peak current is detected on the solenoid.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Broome to incorporate the approximately proportional pressure and current concept as taught by Kurokawa and Archer to determine pressure for the purpose of control pressure in a vehicle braking system (Column 1, lines 7-8).

With respect to claim 23, it is inherent that all determination steps are done by some type of calculation.

With respect to claim 29, although the Broome, Kurokawa or Archer does not explicitly disclose the region being a working volume of a gas spring, it is well known in

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the art that the theoretical principle behind both a gas spring and the brake system of Broome are nearly identical and involves solenoid electromagnetically controlling a spool/valve with a spring system that releases or adds pressure to a volume.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Broome into a gas spring system for the purpose of controlling pressure in a gas spring system.

Allowable Subject Matter

10. Claims 22,24-28 and 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter: Claim 22 is allowable over the art of record because the prior art does not teach or render obvious the entire combination including a method for measuring a pressure in a region which is closed off by a solenoid valve wherein the pressure is determined by means of a family a family of characteristic curves.

Claim 32 is allowable over the art of record because the prior art does not teach or render obvious the entire combination including specifically a control unit that is capable of increasing step by step a PWM ratio of voltage applied to the valve and determining the pressure based on the PWM ratio at the peak point.

Claim 24 is allowable over the art of record because the prior art does not teach or render obvious the entire combination including specifically a method for measuring a pressure where a voltage is applied to a solenoid valve and increased step by step by increasing a PWM ratio step by step, and wherein the pressure is determined on the basis of the PWM ratio at the peak point.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Linkner, Jr. et al. (6,213,572 B1) discloses determining the pressure of a master cylinder by monitoring the current supplied to the solenoids of valves (Column 12, lines 63-67). Ono et al. (6,532,940 B1) discloses a fuel injection control system that utilizes PWM as driving voltage. Longo et al. (4,833,921) discloses a gas pressure measurement device that comprises measuring current that is dependent upon the gas pressure within a pressure chamber. Beale (5,502,968) discloses a gas spring system with a solenoid.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Zhu whose telephone number is (571) 272-5920. The examiner can normally be reached on M-F, 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Hirshfeld can be reached on (571) 272-2168. The fax phone


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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

John Zhu
Examiner
Art Unit 2858

JZ



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